National Institute of Environmental Health Sciences

Dengue and climate change in Australia: Predictions for the future should incorporate knowledge from the past

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Abstract:

Dengue transmission in Australia is currently restricted to Queensland, where the vector mosquito Aedes aegypti is established. Locally acquired infections have been reported only from urban areas in the north-east of the state, where the vector is most abundant. Considerable attention has been drawn to the potential impact of climate change on dengue distribution within Australia, with projections for substantial rises in incidence and distribution associated with increasing temperatures. However, historical data show that much of Australia has previously sustained both the vector mosquito and dengue viruses. Although current vector distribution is restricted to Queensland, the area inhabited by A. aegypti is larger than the disease-transmission areas, and is not restricted by temperature (or vector-control programs); thus, it is unlikely that rising temperatures alone will bring increased vector or virus distribution. Factors likely to be important to dengue and vector distribution in the future include increased dengue activity in Asian and Pacific nations that would raise rates of virus importation by travellers, importation of vectors via international ports to regions without A. aegypti, higher rates of domestic collection and storage of water that would provide habitat in urban areas, and growing human populations in northern Australia. Past and recent successful control initiatives in Australia lend support to the idea that well resourced and functioning surveillance programs, and effective public health intervention capabilities, are essential to counter threats from dengue and other mosquito-borne diseases. Models projecting future activity of dengue (or other vector-borne disease) with climate change should carefully consider the local historical and contemporary data on the ecology and distribution of the vector and local virus transmission.

Source: Ask your librarian to help locate this item.

Resource Description

Early Warning System: ☒

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☒

weather or climate related pathway by which climate change affects health

Human Conflict/Displacement, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Dengue

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Methodology, Other Projection Model/Methodology

Other Projection Model/Methodology: discussion only

Resource Type: ☑

format or standard characteristic of resource

Policy/Opinion

Timescale: ☑

time period studied

Historical

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content